



**CREDIT COURSE OUTLINE**

**I. COVER PAGE**

(1) ENGR 10	(2) INTRODUCTION TO ENGINEERING	(3) 2
Number	Title	Units

(4) Lecture / Lab Hours:	(8)Classification:	
Total Course Hours		
Total Lec hours: 36.00	Degree applicable:	X
Total Lab hours: 0	Non-degree applicable:	
Total Contact hours: 36.00	Basic skills:	
Lec will generate <u>0</u> hour(s) outside work.	(9)RC	Fulfills AS/AA degree requirement: (area)
Lab will generate <u>0</u> hour(s) outside work.		
	General education category:	
(5) Grading Basis:	Grading Scale Only	Major: ENGINEERING
	Pass/No Pass option	Certificate of:
	Pass/No Pass only	Certificate in:
(6) Advisories:	(10)CSU	Baccalaureate: X
Eligibility for Math 101	(11)Repeatable: (A course may be repeated three times)	0
Eligibility for English 126		
Eligibility for English 125		
(7) Pre-requisites(requires C grade or better):		
Corequisites:		

(12) Catalog Description:  
 This course is an introduction to the engineering profession for students interested in a career in engineering or technology. Topics include opportunities in engineering, education plans, internships, the design process, analytical problem solving techniques, project management, and professional ethics. Hands-on projects are used extensively in the course.

**II. COURSE OUTCOMES:**

*(Specify the learning skills the student demonstrates through completing the course and link critical thinking skills to specific course content and objectives.)*

Upon completion of this course, students will be able to:

- I. identify the engineer's role in society.
- II. make informed decisions about their educational and career plans.
- III. analyze issues using the guidelines of engineering ethics.
- IV. apply engineering teamwork skills and the engineering design process towards group projects.

**III. COURSE OBJECTIVES:**

*(Specify major objectives in terms of the observable knowledge and/or skills to be attained.)*

In the process of completing this course, students will:

- I. identify and describe the various disciplines of engineering.
- II. describe how products are designed and created by engineers.
- III. investigate new products being developed by engineers.
- IV. evaluate engineering educational opportunities.
- V. chart their educational paths.
- VI. investigate engineering career and internship opportunities.
- VII. develop a resume and cover letter for an engineering internship.
- VIII. evaluate an engineering job and compare it to their own career interests.
- IX. discuss the standards of engineering ethics.
- X. apply ethical standards towards engineering case studies.
- XI. analyze the application of the engineering design process toward the creation of a product.
- XII. work in engineering teams to apply the engineering design process toward meeting an engineering challenge.
- XIII. manage and document an engineering project.

**IV. COURSE OUTLINE:**

**Lecture Content:**

- A. An Overview of Engineering
  - 1. History of Engineering
  - 2. Engineering Disciplines
  - 3. Engineering Functions
  - 4. Evaluating an Engineering Job
- B. The Engineering Career
  - 1. Educational Planning
    - a. Determining Required Courses for Transfer to a University Engineering Program
    - b. Setting a Transfer-Preparation Plan of Study
  - 2. Career Planning
  - 3. Engineering Internships
    - a. Finding Engineering Internships
    - b. Preparing a resume and cover letter
- C. Engineering Design
  - 1. The Design Process
  - 2. Problem Solving Method
  - 3. Engineering Fundamentals
  - 4. Case Studies in Engineering Design
  - 5. Group Design Projects
- D. Project Management
  - 1. Defining Tasks
  - 2. Organizing personnel
  - 3. Project Documentation
- E. Engineering Ethics
  - 1. Standards of Ethics
  - 2. Case Studies in Engineering Ethics
  - 3. Case Studies in Engineering Failures

**V. APPROPRIATE READINGS**

*Reading assignments may include but are not limited to the following:*

- I. Sample Text Title:
  - 1. Recommended - Oakes, Leone, and Gunn *Engineering Your Future: A Brief Introduction to Engineering*, ed. 3 Great Lakes Press, 2009,  
or
  - 2. Recommended - Jensen *A User's Guide to Engineering*, ed. 1 Prentice Hall, 2006,

II. Other Readings

- Global or international materials or concepts are appropriately included in this course
- Multicultural materials and concepts are appropriately included in this course

If either line is checked, write a paragraph indicating specifically how global/international and/or multicultural materials and concepts relate to content outline and/or readings.

**VI. METHODS TO MEASURE STUDENT ACHIEVEMENT AND DETERMINE GRADES:**

Students in this course will be graded in at least one of the following four categories. Please check those appropriate. A degree applicable course must have a minimum of one response in category A, B, or C.

<b>A. Writing</b>			
Check either 1 or 2 below			
X	<b>1. Substantial writing assignments are required. Check the appropriate boxes below and provide a written description in the space provided.</b>		
	<b>2. Substantial writing assignments are NOT required. If this box is checked leave this section blank. For degree applicable courses you must complete category B and/or C.</b>		
X	a) essay exam(s)	X	d) written homework
X	b) term or other paper(s)	X	e) reading reports
	c) laboratory report(s)		f) other (specify)

*Required assignments may include but are not limited to the following:*

- 1. Writing about career opportunities in engineering.
- 2. Describing the design process and how it leads to an engineered product.
- 3. Writing a research report about an emerging area in engineering.

<b>B. Problem Solving</b> Computational or non-computational problem-solving demonstrations, including:			
X	a) exam(s)		d) laboratory reports
	b) quizzes		e) field work
X	c) homework problems	X	f) other (specify): Engineering Design Projects

**Required assignments may include but are not limited to the following:**

1. Performing basic problem solving calculations.
2. Designing and building a contraption to meet an engineering challenge.

<b>C. Skill demonstrations, including:</b>			
	a) class performance(s)		c) performance exams(s)
	b) field work		d) other (specify)

**Required assignments may include but are not limited to the following:**

<b>D. Objective examinations including:</b>			
X	a) multiple choice	X	d) completion
X	b) true/false		e) other (specify):
X	c) matching items		

**COURSE GRADE DETERMINATION:**

Description/Explanation: Based on the categories checked in A-D, it is the recommendation of the department that the instructor's grading methods fall within the following departmental guidelines; however, the final method of grading is still at the discretion of the individual instructor. The instructor's syllabus must reflect the criteria by which the student's grade has been determined. (A minimum of five (5) grades must be recorded on the final roster.)

If several methods to measure student achievement are used, indicate here the approximate weight or percentage each has in determining student final grades.

Homework: 20% Design Projects: 40% Term Paper: 20% Exams: 20%

**VII. EDUCATIONAL MATERIALS**

For degree applicable courses, the adopted texts, as listed in the college bookstore, or instructor-prepared materials have been certified to contain college-level materials.

Validation Language Level (check where applicable):	College-Level Criteria Met	
	YES	NO
Textbook	<u>  X  </u>	<u>      </u>
Reference materials	<u>      </u>	<u>  X  </u>
Instructor-prepared materials	<u>      </u>	<u>  X  </u>
Audio-visual materials	<u>      </u>	<u>  X  </u>

Indicate Method of evaluation:	
Used readability formulae (grade level 10 or higher)	<u>      </u>
Text is used in a college-level course	<u>  X  </u>
Used grading provided by publisher	<u>      </u>
Other: (please explain; relate to Skills Levels)	<u>      </u>

Computation Level (Eligible for MATH 101 level or higher where applicable)	<u>  X  </u>	<u>      </u>
Content		
Breadth of ideas covered clearly meets college-level learning objectives of this course	<u>  X  </u>	<u>      </u>
Presentation of content and/or exercises/projects:		
Requires a variety of problem-solving strategies including inductive and deductive reasoning.	<u>  X  </u>	<u>      </u>
Requires independent thought and study	<u>  X  </u>	<u>      </u>
Applies transferring knowledge and skills appropriately and efficiently to new situations or problems.	<u>  X  </u>	<u>      </u>

List of Reading/Educational Materials  
 Recommended - Oakes, Leone, and Gunn *Engineering Your Future: A Brief Introduction to Engineering*, ed. 3 Great Lakes Press, 2009,  
 Recommended - Jensen *A User's Guide to Engineering*, ed. 1 Prentice Hall, 2006,

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Comments:

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\_\_\_\_\_ This course requires special or additional library materials (list attached).

\_\_\_\_\_ This course requires special facilities:

Attached Files:

<b>BASIC SKILLS ADVISORIES PAGE</b> The skills listed are those needed for eligibility for English 125, 126, and Math 101. These skills are listed as the outcomes from English 252, 262, and Math 250. In the right hand column, list at least <u>three</u> major basic skills needed at the beginning of the target course and check off the corresponding basic skills listed at the left.	
(eligibility for Math 101) (as outcomes for Math 250)  <input checked="" type="checkbox"/> Performing the four arithmetic operations on whole numbers, arithmetic fractions, and decimal fractions. <input checked="" type="checkbox"/> Making the conversions from arithmetic fractions to decimal fractions, from decimal fractions to percents, and then reversing the process. <input checked="" type="checkbox"/> Applying the concepts listed above to proportions, percents, simple interest, markup and discount. <input checked="" type="checkbox"/> Applying the operations of integers in solving simple equations. <input checked="" type="checkbox"/> Converting between the metric and English measurement systems	Basic calculations related to engineering design.  Calculations involved with analyzing the demographics of the engineering profession  Problem solving involving simple mathematical equations.
(eligibility for English 126) (as outcomes for English 262)  <input checked="" type="checkbox"/> Using phonetic, structural, contextual, and dictionary skills to attack and understand words. <input checked="" type="checkbox"/> Applying word analysis skills to reading in context. <input checked="" type="checkbox"/> Using adequate basic functional vocabulary skills. <input checked="" type="checkbox"/> Using textbook study skills and outlining skills. <input checked="" type="checkbox"/> Using a full range of literal comprehension skills and basic analytical skills such as predicting, inferring, concluding, and evaluating.	Reading about engineering from textbook and other materials.  Reading engineering ethical case studies and evaluating ethical decisions.  Independently learning about engineering topics and organizing information.
(eligibility for English 125) (as outcomes for English 252)  <input checked="" type="checkbox"/> Writing complete English sentences and avoiding errors most of the time. <input checked="" type="checkbox"/> Using the conventions of English writing: capitalization, punctuation, spelling, etc. <input checked="" type="checkbox"/> Using verbs correctly in present, past, future, and present perfect tenses, and using the correct forms of common irregular verbs. <input checked="" type="checkbox"/> Expanding and developing basic sentence structure with appropriate modification. <input checked="" type="checkbox"/> Combining sentences using coordination, subordination, and phrases. <input checked="" type="checkbox"/> Expressing the writer's ideas in short personal papers utilizing the writing process in their development.	Writing paragraph length answers to textbook homework problems.  Writing personal opinion on topics such as engineering ethics.  Writing a short research paper on a topic of engineering.
Check the appropriate spaces. <input checked="" type="checkbox"/> Eligibility for Math 101 is advisory for the target course. <input checked="" type="checkbox"/> Eligibility for English 126 is advisory for the target course. <input checked="" type="checkbox"/> Eligibility for English 125 is advisory for the target course. <i><u>If the reviewers determine that an advisory or advisories in Basic Skills are all that are necessary for success in the target course, stop here, provide the required signatures, and forward this form to the department chair, the appropriate associate dean, and the curriculum committee.</u></i>	

<b>REQUISITES</b>
No requisites